

US EPA ARCHIVE DOCUMENT



FREQUENTLY ASKED QUESTIONS

INITIAL SAMPLE RESULTS EPA SCHOOLS MONITORING INITIATIVE STEVENS CREEK ELEMENTARY SCHOOL

SUMMARY: On August 4, 2009 EPA posted the first preliminary set of air toxics monitoring data, representing the first two samples taken, for Stevens Creek Elementary School in Cupertino, CA. For more information, see EPA's website at: <http://www.epa.gov/region09/air/schools-monitor/stevens-creek.html>.

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What if I have more questions?

If your question or concern was not fully answered by this Q and A document, you may visit our regional website at: <http://www.epa.gov/region09/air/schools-monitor> or our national website at: <http://www.epa.gov/schoolair/>. You may also want to review a fact sheet developed for the monitoring initiative at Stevens Creek Elementary School, available here: <http://www.epa.gov/region09/air/schools-monitor/stevens-creek.html>.

You may also call Kathleen Stewart, Staff Air Quality Risk Assessor with the EPA, Region 9 office in San Francisco at (415) 947-4119, or email us at r9schoolmonitoring@epa.gov.

Press questions should be directed to Francisco Arcaute with the EPA, Region 9 Office of Public Affairs at (213) 244-1815.

1. **When did monitoring begin?**

Monitoring at Stevens Creek Elementary School began at the end of June. Because we do not want to disclose the monitoring schedule prior to the end of the monitoring study, we will not be revealing sampling dates until the end of the study period.

2. **When will the next results be available?**

We will be posting results periodically, approximately every other week. We generally post data on Tuesdays, providing the data have gone through quality assurance checks.

3. **When will the full set of results be available?**

We anticipate that monitoring will be complete by early September. We anticipate that results from the final set of samples will be available in late September. As soon as possible after monitoring is completed, EPA will perform an analysis of the results and make it available to the public through our web site.

4. **What do the current results show?**

No hexavalent chromium was detected in the first two samples, even though the monitor can detect very small amounts. EPA scientists caution that no conclusions can be drawn from these results until all samples have been taken and analyzed along with important information about wind patterns and plant operations on the days samples were taken. Once monitoring is complete at Stevens Creek Elementary School, the full set of results will be analyzed to evaluate the potential for health concerns related to short-term and long-term exposure to hexavalent chromium.

5. **Was the cement plant operating on the days the air samples were taken?**

On the day the first sample was taken, the cement kiln was **not** operating. Once the monitoring period is complete we will provide as much information as possible to the community about the results, including any information we have on facility operations, wind patterns, and other relevant information. We are working closely with the Bay Area Air Quality Management District to gather this information, but we welcome observations from the community at any time as well.

6. **Why did you sample when the kiln was not operating?**

The first sample at Stevens Creek Elementary School is a special, extra sample that is in addition to the routine 60 days of sampling established for EPA's School Monitoring Initiative. We felt it would be valuable to sample air at Stevens Creek Elementary School while the kiln was not operating to understand how the kiln might affect the monitoring results.

7. **Was the wind blowing from the facility to the school on the days the air samples were taken?**

Once the full set of air samples has been collected, EPA will analyze the results to estimate long-term average levels of hexavalent chromium at the school. We will use that information to determine whether these levels are a health concern for school-age children, school staff, and the local community exposed over many years. As part of that analysis we will evaluate information on wind direction and speed. Because we do not want to disclose any information that might hint at the monitoring schedule until the study is complete, we will not be releasing information about wind patterns on the days samples were taken until the end of the study period.

8. **How does the detection limit compare to health values, including California's?**

Detection limits for EPA's School Monitoring Initiative have been established and are described in the School Air Toxics Ambient Monitoring Plan, available at:

<http://www.epa.gov/ttn/amtic/files/ambient/airtox/2009sat/SATMonitoringPlan.pdf>.

Detection limits for all chemicals being monitored by EPA under this initiative are low enough to enable health-based decision making. The detection limit established for hexavalent chromium allows for detection of concentrations of hexavalent chromium well below the health values established by both the U.S. Environmental Protection Agency and the California Environmental Protection Agency.

9. You have the wrong location - why don't you move the monitor to another school?

The original site was chosen as a starting point based on distance from the facility, an analysis of wind direction during the summer months, and the school's proximity to the route used by trucks entering and exiting the cement plant. Once the full set of initial air samples has been collected we will analyze the results, including information on wind patterns and facility operations, to determine if further monitoring is needed.

10. Why aren't you monitoring for mercury?

Mercury, like hexavalent chromium, is a naturally occurring metal that can be present in both the raw materials and the fuel used in cement manufacturing. EPA has recently proposed a rule to control and monitor emissions of mercury and other hazardous air pollutants from cement plants that the public may comment on. Several residents have asked EPA to consider monitoring for mercury as part of this initiative. EPA and the Bay Area Air Quality Management District are analyzing recent monitoring data to identify if additional monitoring in the area is needed at this time.

11. How do you know the monitor is not being tampered with?

All monitors are inaccessible either by location (e.g., on a school roof with restricted access) or by security measures (e.g., within a secure enclosure, video surveillance). Also, an elapsed sample time indicator is included on all samplers used in the school monitoring initiative. Any sample with a duration outside the predetermined, method-specific value is noted on the chain-of-custody form. The sample will be flagged for further evaluation to determine if the results are invalid. Note that all sample retrievals and documentation (i.e., shipping and handling, receipt at the analytical laboratory) and analyses follow extensively developed and strictly enforced protocols. From the time sample media are prepared at the laboratory until the time they're received back at the laboratory and analyzed, the chain of custody is known and verifiable. Protocols for each and every phase of the sampling and analysis are established and followed.

12. How do you know the results are valid?

To ensure validity of data, a process known as verification and validation is performed. Data validation is not just done at the end of the process, but is built into the entire process from start to finish. For details on how verification and validation is performed both in the lab and in the field, please refer to the SAT Quality Assurance Project Plan (QAPP) at: <http://www.epa.gov/ttn/amtic/airtoxschool.html>.

Here is a brief explanation on how verification and validation is performed.

1. Before being shipped to the monitoring site, all collection media (canisters, filters etc) are inspected in the laboratory.
2. All collection media are shipped to the monitoring site in a manner that does not allow contamination.
3. Station operators follow the Standard Operating Procedures (SOPs), this includes the careful handling of all collection media and noting any deviations from standard protocols. Chain of Custody forms are filled out in ink and shipped with the media until arrival at the lab.
4. Laboratory staff handle all materials according to lab protocols and SOPs. SOPs are followed closely in the preparation, extraction and analysis.
5. At the monitoring site, technicians collect two sets of samples (called co-located samples). Both samples are treated in the same manner throughout the sampling, analytical and verification and validation processes. The samples are compared against each other. The EPA has specific tests that are run on collocated data. If the samples do not meet the Measurement Quality Objectives as stated in Section 6 of the QAPP, then further investigation is performed.
6. Samples are placed in analytical instruments which detect the compound and provide a read-out of its concentration. Instruments are carefully calibrated according to strict standards.
7. Once the samples have been analyzed, they are reviewed by senior staff at the laboratory. Any values that might appear to be an outlier (i.e., unusually high or low) are then investigated further.

8. Data are transferred to EPA scientists who review the data and compare this data to the meteorological conditions. Wind speed, direction, temperature are compared and the data are graphed.
9. The data are then compared against risk driver screening levels.

13. What is the likelihood of a false negative?

The analytical instruments used here are very sensitive and the extraction techniques have been refined to the point that false negatives are not very likely. However, false negatives can occur when the data are so low in concentration that they are at or below the method detection limit (MDL) of the analysis. It is possible that a compound may be present, but the instrumentation may not be able to detect it if compound's concentration is extremely low. To minimize this problem, EPA employs laboratories with instruments that have extremely low sensitivity and that use the most advanced analytical techniques. In addition, EPA's contract laboratory continually works to lower their MDLs so as to maximize their ability to detect extremely low concentrations.

14. What types of controls were used in the lab?

Here is synopsis of how controls are employed.

1. The EPA contract laboratory uses the accepted methods that have been refined over many years. For instance, for Volatile Organic Compounds the EPA contract laboratory uses the EPA developed technique known as Toxics Organic method 15. This method can be obtained on the EPA's website: <http://www.epa.gov/ttn/amtic/airtox.html>. Where possible, the laboratory uses the accepted EPA methods. For the dicyanates and the 4,4 methylene dianiline, Occupational Safety and Health Organization (OSHA) and National Institute for Occupational Safety and Health (NIOSH) accepted methods are utilized.
2. Although the technique is followed closely, the laboratory modifies the technique in order to maximize and lower levels of detection. The laboratory has a Quality Assurance Project Plan and Standard Operating Procedures, which reflect the laboratory's practices. EPA scientists then review the QAPP and SOPs annually to assure that the development of the laboratory's techniques are in line with the objectives.
3. The laboratory purchases standard materials that are of the highest quality and purity. These standards must be traceable to the National Institute of Standards and Technology (NIST), which are recognized both in the US and the entire world as the best standards available. These standard materials are then introduced into the analytical instruments and the instruments are then adjusted and tuned to the standard materials. After this process of calibration and tuning, the environmental samples are introduced and analyzed.
4. The data are reviewed by senior laboratory staff to ascertain that all protocols and Standard Operating Procedures are followed.
5. EPA has purchased from an independent laboratory proficiency testing samples. These proficiency testing samples are what are known as single blind samples. The proficiency testing samples are created under strict guidelines. Then the independent lab sends these samples to the EPA contract laboratories. The contract laboratories know these are proficiency testing samples, but do not know the concentration. The results of the proficiency testing samples are compared against the known concentration and the response must be within 30% of the known concentration. If that is not the case, the contract laboratories must make the corrective action to fix the problems. For this program, 3 proficiency testing samples will be used: at the beginning, in the middle and towards the end of the project.
6. The contract laboratories are accredited by an independent audit body known as The NELAC Institute. NELAC stands for the National Environmental Laboratory Accreditation Council. This is an independent body consisting of State, local and private laboratories that perform technical system audits and produce proficiency testing samples for their members. EPA is involved in NELAC and supports their efforts.